C L A I M S

1. An optical-signal autocorrelation-bit-error detection apparatus using an optical branch system, comprising:

optical branch means for branching an optical signal to be measured modulated by a pulse signal and outputting branched optical signals as first and second optical pulse signals;

first light-to-electricity conversion means for converting a first pulse signal supplied from said optical branch means into a first electrical signal and outputting the first electrical signal;

second light-to-electricity conversion means for converting a second pulse signal supplied from said optical branch means into a second electrical signal and outputting the second electrical signal;

first decision means for outputting a reference pulse signal in accordance with a comparison result between the voltage of the first electrical signal supplied from said first light-to-electricity conversion means and a reference-signal generation voltage set to an approximate median of the amplitude of said first electrical signal;

second decision means for outputting a measuring pulse signal in accordance with a comparison result between the voltage of the second electrical signal supplied from said second light-to-electricity

conversion means and a noise detection voltage set to an optional level slid from an approximate median of the amplitude of said second electrical signal to the mark side or space side; and

bit error detection means for detecting an autocorrelation bit error of said optical signal to be measured in accordance with a comparison result between the reference pulse signal supplied from said first decision means and the measuring pulse signal supplied from said second decision means.

2. The optical-signal autocorrelation-bit-error detection means using an optical branch system according to claim 1, characterized in that

said optical branch means outputs said first and second optical pulse signals by setting magnitudes of the signals to n:m (n < m) when branching said optical signal to be measured.

3. The optical-signal autocorrelation-bit-error detection apparatus according to claim 1, characterized in that

said optical branch means branches said optical signal to be measured into N optical signals and outputs them as first, second, third, ..., and Nth (N is an integer of 3 or more) optical pulse signals,

said autocorrelation-bit-error detection apparatus further comprises;

third to Nth light-to-electricity conversion means

for converting said third to Nth pulse signals supplied from said optical branch means into third to Nth electrical signals and outputting the third to Nth electrical signals, and

third to Nth decision means for outputting second to Nth measuring pulse signals in accordance with comparison results between voltages of said third to Nth electrical signals supplied from said third to Nth light-to-electricity conversion means and noise detection voltages set to optional levels slid from approximate medians of amplitudes of said third to Nth electrical signals to the mark side or space side, and

said bit error detection means detects the autocorrelation bit error of said optical signal to be measured in accordance with comparison results between the reference signal supplied from said first decision means and said second to Nth measuring pulse signals supplied from said second to Nth decision means.

4. The optical-signal autocorrelation-bit-error detection apparatus using an optical branch system according to claim 1, characterized in that it is made possible to measure the autocorrelation bit error rate of said optical signal to be measured in accordance with a counted value of autocorrelation bit errors of said optical signal to be measured supplied from said bit error detection means and a counted value of clock signals.

5. An optical-signal autocorrelation-bit-error detection method using an optical branch system, comprising the steps of:

branching an optical signal to be measured modulated by a pulse signal and outputting branched optical signals as first and second optical pulse signals;

converting said first pulse signal into a first electrical signal and outputting the first electrical signal;

converting said second pulse signal into a second electrical signal and outputting the second electrical signal;

outputting a reference pulse signal in accordance with a comparison result between the voltage of said first electrical signal and a reference-signal generation voltage set to an approximate median of the amplitude of said first electrical signal;

outputting a measuring pulse signal in accordance with a comparison result between the voltage of said second electrical signal and a noise detection voltage set to an optional level slid from an approximate median of the amplitude of said second electrical signal to the mark side or space side; and

detecting the autocorrelation bit error of said optical signal to be measured in accordance with a comparison result between said reference pulse signal

and said measuring pulse signal.

6. The optical-signal autocorrelation-bit-error detection method using an optical branch system according to claim 5, further comprising the step of:

measuring the autocorrelation bit error rate of said optical signal to be measured in accordance with a counted value of autocorrelation bit errors of said optical signal to be measured and a counted value of clock signals.